

CLAIMS

1. (Currently Amended) Apparatus for joining a plurality of pieces of pipe, including a first piece of pipe ~~fabricated with a cross-sectional sidewall pattern along its length that is similar in size and shape to the cross-sectional sidewall pattern of~~ and a second piece of pipe each having a similar size and shape sidewall corrugation pattern along their lengths, a first female engagement structure formed from the sidewall corrugation pattern of the first piece of pipe and a male engagement structure formed from the sidewall corrugation pattern of the second piece of pipe, ~~said first piece having a~~ the first female structure ~~end that is being temporarily deformed for receiving a non-deformed~~ the male structure, end of said second piece of pipe, said the temporary deformation being both sufficiently large to permit the insertion of ~~said non-deformed~~ the male structure ~~end of said second piece of pipe~~ but also sufficiently small to ensure that ~~the~~ material memory ~~of said first end~~ returns the first female structure ~~said first end~~ toward its original non-deformed configuration with sufficient compressive force to grip the male structure ~~said second end~~ and prevent its inadvertent removal from engagement with the first female structure ~~said first end~~.

2. (Currently Amended) The apparatus of Claim 1, wherein the female structure includes an inwardly projecting engagement element at its leading edge ~~including engagement elements formed within said cross-sectional sidewall pattern, said engagement elements~~ acting between said first and said second pieces of pipe to increase the force necessary to disengage said pipe pieces from each other following assembly.

3. (Currently Amended) The apparatus of Claim 1 or Claim 2, in which said pipe sidewall corrugation pattern of each piece of pipe includes a corrugated exterior surface and ~~includes~~ an internal non-corrugated liner element.

4. (Cancelled without prejudice)

5. (Currently Amended) The apparatus of Claim 1, in which said first piece of pipe includes a second female engagement structure ~~and~~ remote from said first female structure ~~and~~, said second female structure ~~and~~ also being temporarily deformed to function as a female structure ~~and~~ for receiving a corresponding non-deformed end of a third piece of pipe, said third piece of pipe having a ~~cross-sectional~~ sidewall corrugation pattern along its length that is similar in size and shape to the ~~cross-sectional~~ sidewall corrugation pattern of said first and second pieces of pipe.

6. (Original) The apparatus of Claim 1, including a sealing element positioned between confronting surfaces of said first and second pieces of pipe to help provide a watertight seal therebetween.

7. (Currently Amended) The apparatus of Claim 1, including an adhesive material acting between confronting surfaces of said first and second pieces of pipe to bond said first and second pieces to each other upon insertion of said second piece into said female structure ~~and~~ of said first piece of pipe.

8. (Currently Amended) A stretching tool for use in connection with the apparatus of Claim 1, including a channel into which an edge of said first piece of pipe can be inserted in its originally fabricated shape, said tool including means to temporarily deform said edge ~~to said a~~

~~female end configuration capable of receiving said non-deformed end of said second~~ of said first
piece of pipe piece.

9. (Currently Amended) The tool of Claim 8, including a plurality of rollers positionable along the inside and outside surfaces of said edge ~~eventual first female end~~ of said first piece of pipe, and further including means for exerting force to act between said rollers and said edge ~~eventual first female end~~ to deform said edge ~~first female end~~ from its originally fabricated shape to eventually form a first female end.

10. (Currently Amended) A temporary stretch-holding device for use in connection with the apparatus of Claim 1, said device including a first portion for temporary insertion into said temporarily deformed female structure end of said first pipe piece, said first portion being sized and configured to retain a sufficient degree of ~~said~~ deformation of said temporarily deformed female structure end so that, upon ~~said~~ removal of said temporary stretch-holding device from said temporarily deformed female structure end, a non-deformed end of said second piece of pipe may be inserted into engagement with said female structure end.

11. (Currently Amended) The device of Claim 10, in which said device is fabricated with a ~~cross-sectional~~ sidewall corrugation pattern that is similar in size and shape to the ~~cross-sectional~~ sidewall corrugation pattern of said first piece of pipe, and further including a second portion to assist in desired removal of said device from said temporary insertion into said deformed female structure end, said first ~~second~~ portion includes a circumferential gap ~~radial cut~~ to allow a degree of compression of said ~~cross-sectional~~ corrugation pattern to facilitate the desired insertion into and removal from said female structure end.

12. (Currently Amended) The device of Claim 10, in which said device is fabricated with a ~~cross-sectional~~ sidewall corrugation pattern that is similar in size and shape to the ~~cross-sectional~~ sidewall corrugation pattern of said first piece of pipe, and further including a second portion to assist in desired removal of said device from said temporary insertion into said deformed female structure ~~end~~, said second portion includes an axially lengthwise cut to allow a degree of compression of said device to facilitate the desired insertion into and removal from said female structure ~~end~~.

13. (Currently Amended) The device of Claim 10, further including a ~~in which said~~ second portion ~~includes~~ having a strap element upon which force can be exerted to effect the desired removal of said temporary stretch-holding device from said deformed female structure ~~end~~.

14. (Currently Amended) The device of Claim 10, further including a ~~in which said~~ second portion ~~includes~~ having a grippable area ~~of said device~~ upon which force can be exerted to effect the desired removal of said temporary stretch-holding device from said deformed female structure ~~end~~.

15. (Currently Amended) The device of Claim 10, wherein ~~in which~~ said device is sized and configured for use as a cover over ~~the~~ a pipe joint formed with said female structure after said device is removed from said temporary engagement within said female structure ~~end~~.

16. (Withdrawn)

17. (Withdrawn)

18. (Withdrawn)

19. (Currently Amended) A coupling system for coupling ~~like shaped and like sized~~ pipe segments to each other, each pipe segment having a similar size and shape sidewall corrugation

pattern along its length, the corrugation pattern including a female end of a first pipe formed from the corrugation of the first pipe segment and a male end formed from the corrugation of a second pipe segment, at least one of said female and said male ends being temporarily deformed within its elastic limits to permit insertion of said male end into said female end, at least one of said temporarily deformed said female and said male end returning toward its original configuration following insertion of said male end into said female end, said female and male ends configured so that hoop stresses are generated by the material memory of said deformed end to maintain desired engagement between said pipe segments.

20. (Currently Amended) A pipe joint comprising: first and second pieces of pipe having a generally uniform ~~cross-sectional~~ corrugated sidewall pattern along their lengths; a female end of said first piece of pipe formed from said corrugated sidewall pattern by temporary expansion of said end via application of energy thereto, said expansion not exceeding the limits of the pipe material's ability to return substantially to its original ~~cross-sectional~~ shape and size; and a non-expanded end of said second piece of pipe insertable within said female end of said first piece of pipe while said female end is expanded.

21. (New) A coupling system for coupling like-shaped and like-sized pipe segments to each other comprising: a female end of a first pipe segment and a male end of a second pipe segment, at least one of the first and second pipe segments having a tapered leading edge adapted to generally confront the other pipe segment along a tapered mating surface upon coupling of the pipe segments to each other, at least one of the female and the male ends capable of being temporarily deformed within its elastic limits to permit insertion of the male end into the female end, at least one of the temporarily deformed female and the male ends returning toward its

original configuration following insertion of the male end into the female end, the female end and male end configured so that material memory facilitates a substantially confronting relationship of the tapered surfaces.

22. (New) A coupling system for coupling like-shaped and like-sized pipe segments to each other comprising: a female end of a first pipe segment and a male end of a second pipe segment, the male end having a substantially non-horizontal outer surface when viewed in lengthwise cross-section, said outer surface adapted to substantially engage the other pipe segment upon coupling of the pipe segments, at least one of the female and the male ends capable of being temporarily deformed within its elastic limits to permit insertion of the male end into the female end, at least one of the temporarily deformed female and the male ends returning toward its original configuration following insertion of the male end into the female end, the female end and male end configured so that engagement of their confronting surfaces is facilitated by material memory.

23. (New) The coupling system of Claim 22, further including a sealing means acting between the substantially non-horizontal confronting surfaces.

24. (New) A pipe having a similar size and shape sidewall corrugation pattern along its length, the pipe having a female engagement structure positioned at one end of the pipe, said engagement structure integrally formed from the sidewall corrugation pattern.

25. (New) The pipe of Claim 24, said pipe further having a male engagement structure positioned at the opposite end of the pipe from the female engagement structure, each engagement structure integrally formed from the sidewall corrugation pattern.

26. (New) The pipe of Claim 24, said pipe further having a second female engagement structure positioned at the opposite end of the pipe from the first female engagement structure,
each engagement structure integrally formed from the sidewall corrugation pattern.

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